Chief Engineer, Towboat **Bmk. No. C-21**
XH-4742-15

MAJOR DUTIES

Serves as Chief Engineer on a large (over 100 feet in length) diesel-powered twin screw towboat with a total horsepower of 2,000 hp or more operating in the inland waters of the United States. Supervises a subordinate staff of 2-12 employees assigned to separate shifts during vessel operations and employed as assistant engineer, striker, and/or marine-oiler. Stands a regular watch in the engine room. Exercises 24-hour responsibility for the operation, maintenance, and repair of all engine room and associated machinery, refrigeration, plumbing, heating, and hydraulic/electric/electronic systems.

1. Exercises supervisory responsibility over the engine room crew employed in several trades occupations including assistant engineers, strikers, and marine-oilers. Accomplishes the following supervisory duties and responsibilities:

a. Planning. Periodically inspects all engine room and auxiliary machinery, equipment, and systems to determine the condition, maintenance needs, and required operating repairs. Plans detailed work schedules, shift assignments, and sequences of work operations for subordinates. Establishes deadlines and priorities on the basis of general work schedules, methods, and policies established by the Master. Determines work methods and procedures to be used; number and types of employees required; and tools, equipment, and materials required to accomplish the work. Determines how many assignments can be accomplished concurrently. Ensures that tools, materials, and supplies necessary to accomplish the work are available. Makes cost estimates and estimates materials and man-hours required to accomplish repairs. Consults with Master relative to recommendation for major operating repairs, and overhauls and obtains required authority for accomplishment of the work. Provides support to the Master in compiling annual lay-up repair, maintenance, and modification requirements.

b. Work Direction. Participates with considerable weight in the selection of workers. Assigns individuals to shifts and through the assistant engineers on the shift, directs the work efforts of subordinates. Explains work requirements, methods, and procedures; instructs subordinates in new work procedures; and provides technical advice and guidance when problems arise. Through the assistant engineers, reviews the work of shift crews and makes periodic inspections of all completed repairs. Makes adjustments, plans, assignments, and methods as necessary to accomplish the work as effectively and economically as possible. Determines the tools, equipment, supplies, and maintenance required on the shifts and takes action to assure the arrival of supplies, parts, and equipment as needed. Through subordinate assistant engineers, evaluates work in progress and assures that quality standards and quantity requirements are met. Coordinates the work of the engine room with related or impacted work of other towboat crews. Personally directs repairs involving major breakdown of equipment.

c. Administration. Schedules and approves leave of subordinates. Sets performance requirements and prepares performance appraisals. Counsels employees on problems and adjusts informal complaints through discussion with employees, assistant engineers, and union representatives. Takes informal corrective action on conduct or performance problems and refers

serious problems along with recommendations for disciplinary action to Master for resolution. Plans necessary on-the-job training and ensures that such training is effectively and adequately carried out. Promotes the participation of subordinates in programs such as the suggestion program, cost reduction program, etc. Periodically reviews job descriptions of subordinates for currency and accuracy; reports detailing of employees to jobs other than their own; initiates or participates in review and improvement of work methods, organizational features, and the structuring of positions to eliminate unnecessary ones. Accomplishes supervisory functions in accordance with organization EEO and Affirmative Action programs.

2. Prepares and maintains engine room production reports and records such as engine room logs and reports reflecting work performed, repairs made, temperature and/or gage readings, and monthly reports to Headquarters office. Compiles annual repair and overhaul lists and estimates the time and effort required to accomplish such work during the non-towing season. Requisitions all spare and replacement parts and materials. Instructs and trains subordinates in the safe and efficient performance of their duties and studies the operations supervised with a view to correcting or reporting for correction any unsafe conditions or unsafe work practices that might cause injury to employees or persons or property damage.

3. Supervises, directs, and/or personally performs repair work of a highly technical nature. Inspects and diagnoses engine problems and determines the repairs necessary. Visually inspects the engine room, machinery and equipment, and electric and/or electronic systems to ensure that they are maintained in a clean and orderly fashion. Furnishes information as to the status of work and compiles workload data pertinent to the impact of repairs on operations plans and requirements. Maintains and secures all tools, supplies, and equipment issued to the engine room department.

3. Prepares machinery and equipment for preservation during lay-up. Supervises all repairs made to vessel mechanical and electrical equipment during annual lay-up repairs. Incumbent may be assigned to the maintenance and repair of floating plant or other essential duties during annual lay-up periods.

Performs other duties as assigned.

SKILLS AND KNOWLEDGES

--Must hold a U.S. Coast Guard Chief Engineer's license commensurate with the type engine room machinery and equipment, horsepower, and characteristics of the vessel to which assigned.

--A knowledge of the vessel diesel, electric, mechanical, hydraulic and/or electronic equipment, systems, and auxiliary plant and machinery, and the related knowledge and skill requirements to diagnose problems and malfunctions and supervise and participate in the repair, replacement, and modification of such machinery, engines, and systems. Applies the knowledge to understand how such equipment and systems operate individually or in combination and the ability to plan and lay out repair, replacement, maintenance, and modification plans and requirements ranging from those of a minor nature to those of extreme complexity. Applies a knowledge of the fuel, water, and waste treatments associated with the various equipment and systems.

--Knowledge and ability to interpret and apply working drawings, sketches, diagrams, blueprints, and various information in technical manuals. Applies knowledge of advanced shop math to accomplish computations pertinent to electricity and electronics, electronic equipment, air conditioning and heating, refrigeration and mechanical dimensions, tolerances and voltages. Applies skill and knowledge in the use of a variety of testing instruments including refrigeration gages, ammeters, ohmmeters, and temperature testers in diagnosing problems and malfunctions, and a variety of measuring devices including feeler gages, vernier calipers, inside and outside calipers and micrometers, thread gages, dial indicators, screw pitch gages, protractors, dividers, composers, steel squares, clinometers, etc. Applies skill to accomplish work to tolerances of .001 inch.

--Knowledge of the uses of lathes, shapers, and milling machines to understand the processes necessary for certain repairs. Knowledge and skill in the use of drill press, honing equipment, grinders, jig borers, jig grinders, power hacksaws, electric and acetylene welding and flame cutting processes, and a variety of electric and hand tools common to the trades involved. Applies a knowledge of the characteristics of a variety of metals and alloys such as stainless, monel, brass, bronze, babbit, silver, aluminum, mild and hardened steels, etc.

RESPONSIBILITY

Works under the general supervision of the Master. Receives oral and written assignments including blueprints, drawings, and charts. Plans and accomplishes work in accordance with standard procedures, directives, regulations, U.S. Coast Guard regulations, and overall marine requirements. Receives no technical guidance or technical supervision in operation and repair of engine room facilities and exercises independent judgment and initiative in connection with the operation and maintenance of all mechanical and electrical equipment. Work is subject to spot checks for proficiency of performance as determined from continuity of operation. Engine room facilities are subject to periodic inspections by U.S. Coast Guard for compliance with marine safety regulations.

WORKING CONDITIONS

Work is performed inside and outside subjecting employee to varying climatic conditions, abnormal noises, temperature, danger of burns, irritation from grease and oils, bruises, strains, danger from attending moving machinery, falling overboard, electrical shock, falls on slippery decks or steep stairways, possible drowning, and crankcase explosion. Life jackets are worn at all times while on deck.

PHYSICAL EFFORT

Incumbent performs work from ladders, scaffolding, and platforms and where the parts, equipment, or systems are in hard-to-reach places. Work requires the incumbent to stand, stoop, bend, kneel, crawl, climb, and work in a tiring and uncomfortable position. Frequently lifts, carries, and sets up parts and equipment that weighs up to 40 pounds.

Bmk. No. C-21

CHIEF ENGINEER, TOWBOAT
XH-4742-15
EVALUATION STATEMENT

1. REFERENCES:

a. OPM, JGS, Utility Systems Repairer-Operator Series, WG-4742, July 1993

b. U.S. Army Corps of Engineers Ladder Diagram, 1953

2. SERIES AND TITLE DETERMINATION:

Position serves a Chief Engineer on a large (over 100 feet in length) diesel-powered twin screw towboat with a total horsepower of 2,000 hp or more. Employee supervises a staff of 2-12 employees assigned to separate shifts during vessel operations and employed as assistant engineer, striker, and/or marine-oiler. Duties require knowledge of the vessel diesel, electric, mechanical, hydraulic and/or electronic equipment, systems, and auxiliary plant and machinery, and the related knowledge and skill requirements to diagnose problems and malfunctions and supervise and participate in the repair, replacement, and modification of such machinery, engines, and systems. Employee must hold a U.S. Coast Guard Chief Engineer's license commensurate with the type engine room machinery and equipment, horsepower, and characteristics of the vessel to which assigned. Position is allocated to the WG-4742 series. Position is titled Chief Engineer, Towboat, in keeping with prevailing maritime titling practices. The absence of the requirement for a Chief Engineer's license precludes classification as Chief Engineer, Towboat.

3. GRADE DETERMINATION:

This benchmark reflects the highest level of technical engine room and overall vessel mechanical and electrical repair expertise and requires an expert knowledge of the problem diagnosis, modification and repair of diesel, mechanical, hydraulic, electrical/electronic equipment, systems, and auxiliary plant and machinery. Requirements at this level include:

(1) Work is not subject to technical supervision and includes responsibility for all engine room operation, maintenance and repair functions on a 24-hour basis.

(2) The large size and horsepower of the towboat, the volume, scope and variety of the machinery, equipment and systems which must be maintained, repaired or modified involves substantial complexities and requires that the incumbent possess expert mechanical, hydraulic, electric/electronic diagnostic repair knowledge and skills.

(3) The Engine Room maintenance, repair and modification requirements necessitate that the Chief Engineer exercise supervisory responsibilities for a subordinate staff of 2-12 employees assigned to separate shifts with each shift being supervised by a crew chief.

The grade of the Chief Engineer is ranked one grade level below that of the Master.

NOTES ON USING THIS BENCHMARK

Vessels that are significantly smaller in size, horsepower, volume and complexity of machinery, equipment, electrical/electronic systems requires significantly lesser diagnostic, repair, modification and maintenance skills, knowledges and work requirements. The Master of these types of vessels are graded lower than the XH-16 level. Once the grade of the Master is determined, the Chief Engineer is ranked one grade level below the Master.

No criteria is provided for a higher ranking since XH-15 represents the maximum level to which a Chief Engineer on a towboat may be assigned.